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DEPARTMENT OF HEALTH  
DIVISION OF ENVIRONMENTAL HEALTH

Bureau of Water Pollution Control  
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**RECEIVED**  
APR - 1 1988

**DIVISION OF  
OIL, GAS & MINING**

March 29, 1988

Mr. Joseph C. Milbourne  
North Lilly Mining Company  
851 Traeger Street, Suite 320  
San Bruno, CA 94066

RE: Tintic Project  
Plan Review Comments

Dear Mr. Milbourne:

We have reviewed your 15 March 1988 response to our comment letter on the plans and technical specifications for this project.

The following are comments on the Steffen Robertson & Kirsten technical specifications received on 15 March 1988 (Appendix E). Reference is made to the original numbering system in our 14 December 1987 letter.

1. Reference 3.2. This comment acceptably meets with the secondary liner requirements shown on the revised plans and the revised technical specifications.
3. Reference 3.2. This comment acceptably meets the revision of the drawings and the deletion of the reference from the technical specifications.
4. Reference 3.2.1. This comment has been acceptably answered by revisions in the technical specification reference 8.5 and 9.2.2.
9. Reference 5.1/5.2. The specification for the sand material which will be used in the leak detection system must have a high hydraulic conductivity to meet the minimal head requirement for the leak detection system. We have concern that even a small fraction of material passing through sieve #200 will decrease the hydraulic conductivity dramatically.
10. Reference 6.0. The construction quality control procedures proposed for the secondary clay liner will be acceptable with the addition of the following:

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- a. Clay thickness verification for each lift of clay on a 50 foot by 50 foot grid system.
- b.  $1.0 \times 10^{-7}$  centimeter per second permeability verification per lift on a 200 foot by 200 foot grid system.

It is also again emphasized that the acceptability of each lift of the secondary liner must be established before the next lift is laid.

- 12. Reference 7.1. This comment has been satisfactorily addressed.
- 13. Reference 7.3. The spillage containment details presented in Attachment A are acceptable if the berm around the acid storage tank is shown. This complete detail must then be incorporated as part of the project plans.
- 14. Reference 7.3. This comment has been acceptably addressed and the information provided will become an operational condition of the construction permit.
- 15. Reference 7.3. We have reviewed the section in the copy of the Notice of Intent submitted and have the following comments:
  - a. Any spill of process solutions or chemicals outside of a contained area must be reported to the Bureau of Water Pollution Control by phone within 24 hours and in writing within 7 days.
  - b. The contaminated material must be neutralized immediately.
  - c. After review by the appropriate regulatory agency the disposition of all contaminated materials will be determined.
- 16. Reference 8.0. This comment has been acceptably addressed and the information provided must become part of the closure document which will be required as a condition of the construction permit.
- 17. Concerning the neutralized ore body we understand that the ore body will be reclaimed in place. Any grading which would be allowed must not cause neutralized ore to be deposited outside the liner surface.
- 18. Reference 8.0 Based on your consulting engineers response we have conducted additional research and conclude that an impervious cap over the spent ore pile will not be required for the Tintic project. However it must be understood that the neutralization procedures and requirements presented in the Bureau's comment letters for this project must be incorporated into the closure document which will be required by the construction permit.
- 19. Reference 8.0. This comment will be addressed as part of the closure document special condition of the construction permit. Our position is that the slimes, precipitants and solids in the process ponds must be neutralized and properly disposed of before disposing of the liner.

20. Reference Tech. Specification 5.3. This comment has been adequately addressed through your consultants in response to other comments.
21. Reference Tech. Specification. 6.2. This comment has been adequately addressed by your consultants in response to other comments.
23. Reference Tech. Specification. 6.3. The integrity of the flexible membrane liner is critical to the success of the project. We strongly recommend that the most stringent field seam testing procedure be required in the technical specifications.
24. Reference Tech. Specification. 6.4. We understand per phone conversation with Mr. Don Poulter that all process solution piping will be routed so any leakage or spillage will be contained in an appropriately lined pond or pad. As soon as the routing of all process piping is shown and this condition can be verified this comment will be deleted.
25. Reference Tech Specification 7.2. This comment has been adequately addressed.
26. Reference Tech Specification. 8.1. This comment has been adequately addressed by revisions to the technical specification.
28. Reference Tech Specification. 9.1. This comment has already been addressed see comment No. 10 in this letter.
30. Drawing 13701/01 must be revised per our comments in our letter of 9 March 1988.
33. We still request that the equipment procedures and techniques which will be used to place the ore on the pad liner be submitted as stated in our 29 February 1988 letter.
34. We still request that the materials which will be used to construct the secondary liner be analyzed for gypsum content to determine if there are any potential problems.
35. This new comment will summarize our comments No. 9, No. 25, and No. 32 with regard to the leak detection system proposed.
  - a. The prepared foundation will consist of existing fine grained materials of a maximum permeability of  $1.0 \times 10^{-5}$  centimeters or less. Some assurances must be provided that sand and gravel lenses will be removed and replaced

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with at least Six (6) inches of fine grained material and that densities sufficient to achieve the  $1.0 \times 10^{-5}$  centimeters per second or less will be achieved.

- b. The leak detection system should gravity drain to a sump or other containment where any leakage can be visually observed.

- No. 36. Technical Specification. 2.7. It is suggested that precautions to the contractor to prevent damage to the liner be briefly outlined.
- No. 37. Technical Specification. 5.5. The 3 inch maximum particle size for material which will be used to construct the secondary clay liner is too large.
- No. 38. Technical Specification. 6.11. As stated in our 29 February 1988 letter, the flexible membrane must meet the minimum requirements of the National Sanitation Foundation (NSF) Standard No. 54.
- No. 39. Technical Specification. 6.11. The nondestructive testing of the flexible membrane field seams must be conducted in accordance with ASTM Standard Practice D4437-84.
- No. 40. Technical Specification 6.12/drawing 13701/03. The leak detection system may be simplified for convenience and ease in construction. It must drain into a sump for visual observation.
- No. 41. Technical Specification reference 7.2.1 and note 2 on drawing 13701/03 should be referenced or combined.
- No. 42. Technical Specification 7.2.2 should indicate a maximum material size for the top lift of the secondary clay liner be less than 3/4 inch in size.
- No. 43. Technical Specification 7.3. The base foundation for the leak detection system must consist of 6 inches minimum of  $1.0 \times 10^{-5}$  centimeters per second material.
- No. 44. Technical Specification 9.1. The tests and frequency which will be utilized by the engineer to ensure proper quality assurance of the fill material must be stated.
- No. 45. Technical Specification 10.3. The minimum requirements for testing frequency for general fill should be a minimum of one test per day or work area.

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No. 46. The slope which will be provided so the process ponds leak detection system will drain to the collection sump must be specified.

Per phone conversation with yourself 28 March 1988 we understand that the following will be the liner systems for the Tintic project:

- a. A 40 mil PVC primary liner will be used beneath the heap leach pad with an edge of 40 mil OR PVC wherever the liner will be exposed to the environment.
- b. A 40 mil mil OR PVC primary liner and a 30 mil secondary liner will be used in the process ponds.

Please call Charlie Dietz at (801) 538-6146 if there are any problems.

Sincerely,

UTAH WATER POLLUTION CONTROL COMMITTEE



Don A. Ostler, P.E.  
Executive Secretary

CGD/dgm

CC: Mr. Don Poulter, Steffen, Robertson & Kirsten  
Mr. Roger Foisy, State Health Department, Richfield, Utah  
Mr. Bruce Hall, Central Utah District Health Department  
Oil, Gas and Mining

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